

REMARKSIN THE CLAIMS:

Applicant has requested that original Claims 2 – 4, and 9 be canceled.

Applicant requests that original Claims 1, 5, 6, and 8, 10 be amended in order to better describe the invention.

ORIGINAL CLAIM 1 IS AMENDED AS FOLLOWS

In original line 3 of the claim, the words -- an interior wall and -- are ADDED AFTER the word “comprising” and BEFORE the word “open”; the words “first and second” BEFORE the word “ends” are DELETED and REPLACED with the words -- inlet and outlet -- ; the word “first” BEFORE the words “end is disposed” is DELETED and REPLACED with the word -- inlet --; and the word “proximal” AFTER the words “end is disposed” is DELETED and REPLACED with the word -- adjacent --. The changes are made to better describe the invention. The first change is made to add a limitation to the claim to support antecedence of additional limitations added later in the claim. Support is found in canceled Claim 2. The second change is made to comport the claim language with the description recited in the written specification and to clarify the direction of motion of the fuel/air mixture. Support is found in lines 17 and 18 of paragraph [0015] of the written description and in the inherency of FIGs. 1A and 1B. The third change is made to comport the clause with the immediately preceding change made to the claim. The fourth change is made to better characterize the position and location of the conical tube with respect to the fuel nozzle. Support is found in line 10 of paragraph [0015] of the written description and in the inherency of FIGs. 1A, 1B and 2.

In original line 4 of the claim, the word -- fuel -- is ADDED AFTER the words “to said” and BEFORE the words “injector nozzle”; and the word “second” AFTER the words “of said” is DELETED and REPLACED with the word -- outlet --. The first change is made to provide proper antecedence for the limitation “nozzle”. The second change is made to comport the clause with the change to the claim in original line 3.

In original line 5 of the claim, the semicolon ending the clause is DELETED and the clause -- a fairing structure comprising a smoothly curving edge, rolling outward from said inlet end and away from said interior wall at a constant radius; and -- is ADDED AFTER the word “and”. The change is made to further limit the claim by including several of the limitations of canceled Claims 2 – 4. Support is found in canceled Claims , in **FIG. 2**, and in the inherency of line 8 of paragraph [0012] and lines 11, 17 and 18 of paragraph [0015] of the written description.

In original line 6 of the claim, the semicolon ending the phrase -- equal to about 1 to 2 times said inlet diameter -- is ADDED AFTER the words “fixed distance”. The change is made to further limit the claim by including the limitations of canceled Claim 9. Support is found in the canceled claim, in **FIG. 2**, and in line 10 of paragraph [0015] of the written description.

ORIGINAL CLAIMS 2 – 4 ARE CANCELED

ORIGINAL CLAIM 5 IS AMENDED AS FOLLOWS

In original line 1 of the claim, the dependency of the claim is changed from Claim 4 to Claim 1 due to the cancellation of Claims 2 – 4.

Further in original line 1 of the claim, the phrase – fairing structure comprises a -- is ADDED AFTER the words “wherein said” and BEFORE the words “rolled annulus”; the words “has a third” AFTER the words “rolled annulus” are DELETED and REPLACED with the words -- having a cross-section width with a --; and the word -- of -- is INSERTED AFTRER the word “diameter” and BEFORE the word “about”. The first change is made to add the limitation of canceled Claim 3 in order to better describe the relationship between the “fairing structure” and the “rolled annulus”. Support is found in canceled Claim 3, in lines 13 and 14 of paragraph [0015] of the written description and in **FIGs. 1A, 1B and 2**. The second change is made to clarify the description of the “fairing structure” by removing the reference to a “third diameter” and by using the description recited in the specification. Support is found in lines 17 and 18 of paragraph [0015] of

the written description and in **FIG. 2**. The third change is made to provide proper syntax and grammar.

In original line 2 of the claim, the quantities “0.5” and “0.8” are DELETED and REPLACED with the quantities -- 0.25 -- and -- 0.4 -- , respectively; and the word “first” BEFORE the words “times said” and BEFORE the word “diameter” is DELETED and REPLACED with the word -- inlet --. The first change is made to clarify the size of the rolled annulus and to remove the reference to the “third” diameter which is not expressly recited in the written specification. Support for the change is found in line 19 of paragraph [0015] of the written description and in **FIG. 2**. The second changes are made to comport these claims with the change made to original line 3 of Claim 1.

ORIGINAL CLAIM 6 IS AMENDED AS FOLLOWS

In original line 1 of the claim, the dependency of the claim is changed from Claim 4 to Claim 1 due to the cancellation of Claims 2 – 4.

Further in original line 1 of the claim, the words “center line has” AFTER the words “wherein said” are DELETED and REPLACED with the phrase -- fairing structure comprises --; and the word “fourth” AFTER the word “a” and BEFORE the word “diameter” is DELETED. The first change is made to add the limitations of canceled Claim 3 in order to better describe the relationship between the “fairing structure” and the conical tube. Support is found in canceled Claim 3, in lines 13 and 14 of paragraph [0015] of the written description, and in **FIGs. 1A, 1B and 2**. The second change is made to clarify the description of the “fairing structure” by removing the reference to a “fourth” diameter which the Examiner has correctly noted is not recited in the specification.

In original line 2 of the claim, the word “first” AFTER the words “sum of said” is DELETED and REPLACED with the words -- inlet diameter --; the word -- twice -- . is ADDED BEFORE the words “said third diameter”; and the words “third diameter” are DELETED and REPLACED with the words -- constant radius --. The first and second changes are made to clarify the size of the “fairing structure”. Support for the change is found in **FIG. 2** and in line 19 of paragraph [0015] of the written description. The third

change is also made to clarify the size of the “fairing structure”. Support is found in **FIG. 2**, in paragraphs **[0012]** and **[0015]** of the written description, and in newly amended Claim 1 are made to comport these claims with the change made to original line 3 of Claim 1.

ORIGINAL CLAIM **7** IS UNCHANGED

ORIGINAL CLAIM **8** IS AMENDED AS FOLLOWS

In original line 2 of the claim, the word “first” BEFORE the words “times said” and BEFORE the word “diameter” is DELETED and REPLACED with the word -- inlet --. The changes are made to comport this claim with the change made to original line 3 of Claim 1.

ORIGINAL CLAIM **9** IS CANCELED

ORIGINAL CLAIM **10** IS AMENDED AS FOLLOWS

In original line 10 of the claim, the words “and about a center line in the plane of said inlet end” are DELETED and REPLACED with the words -- with a constant radius -- . The change is made to better describe the invention. Support is found in **FIG. 2**, in inherency found at line 8 of paragraphs **[0012]** and at lines 11, 17, and 18 of paragraph **[0015]** of the written description.

In original line 11 of the claim, the words -- comprises a fairing structure -- are ADDED AFTER the words “rolled edge” are DELETED; and the punctuation and words “, wherein said center line has a fourth diameter” are DELETED. The changes are made to better describe the invention. The first change is made to add the limitation of canceled Claim 3 in order to better describe the relationship between the “fairing structure” and the “rolled annulus”. Support is found in canceled Claim 3, in lines 13 and 14 of paragraph **[0015]** of the written description and in **FIGs. 1A, 1B** and **2**. The second change is made to clarify the description of the “fairing structure” by removing the reference to a “fourth” diameter which the Examiner has correctly noted is not recited in the specification.

In original line 12 of the claim, the word -- diameter -- is ADDED AFTER the words “sum of said first”; the word -- twice -- is ADDED BEFORE the words “said third diameter”; and the words “third diameter” are DELETED and REPLACED with the words -- constant radius -- . The change is made to better describe the invention. Support is found in **FIG. 2**, and in inherency found at line 8 of paragraphs [0012] and at lines 11, 17, and 18 of paragraph [0015] of the written description.

In original line 13 of the claim, the words -- equal to about 1 to about 2 times said first diameter -- are ADDED AFTER the words “at a distance”. The change is made in order to add a limitation found in Claim 9 in order to further distinguish the invention over the prior art. Support is found in original Claim 9, in **FIG. 2**, and in at line 10 of paragraph [0015] of the written description.

IN THE SPECIFICATION:

Applicant has amended paragraph [0015] as follows.

In original line 18 of the paragraph, the word -- annular -- is ADDED BEFORE the words “cross-section at”; the words -- each side of -- ; are ADDED AFTER the words “cross-section at” and BEFORE the words “the opposite inlet end”; the words “fairing radius” are DELETED and REPLACED with the word -- width --; and the words -- of the annular cross-section --; are ADDED AFTER the word “dimensions” and BEFORE the words “are about”. The change is made to better describe the structure of **FIG. 2** to which the two sentences refer. Support is found in **FIG. 2**.

Applicant asserts that no new matter was introduced as the result of the foregoing amendments.

REJECTION UNDER 35 U.S.C. §112***Examiner's Remarks:***

Examiner has rejected Claim 6 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as his invention in that:

"...The limitation "a fourth diameter" is not disclosed in the specification and the drawing."

Applicant's Response:

Applicant thanks the Examiner for his remarks and apologizes for the lack of clarity in the claim. Applicant has rectified this by amending both Claim 6 and paragraph [0015] in an attempt to better describe the invention as it is disclosed in the Figures, particularly in FIG. 2. By doing so, Applicant therefore believes that he has addressed and cured the deficit found by the Examiner in Claim 6. Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw his rejection of Claim 6 and to pass this claim to allowance.

REJECTION UNDER 35 U.S.C. §102(b)***Examiner's Remarks:***

Examiner has rejected Claims 1 – 5, 8 – 10 under 35 U.S.C. 102(b), as being anticipated by Sharpe (U.S. Patent Serial No. 2,720,753) in that,

"...Sharpe discloses an injection nozzle comprising: a conical tube 3 coaxial with a fuel injector 4, means 1 for supporting the conical tube at a fixed distance longitudinally and axially away from the fuel injection nozzle, the tube 3 with flat interior and a rolled annulus 9 (see figure 1)."

and further, Examiner has rejected Claims 1 – 3, 8 – 10 under 35 U.S.C. 102(b), as being anticipated by Pontoppidan et al., (U.S. Patent Serial No. 5,694,898) in that:

“...Pontoppidan et al discloses an injection nozzle comprising: a conical tube 15 coaxial with a fuel injector 1, means 14 for supporting the conical tube at a fixed distance longitudinally and axially away from the fuel injection nozzle, the tube 15 with flat interior 17 and a fairing (adjacent to o-ring 18, see figure 1).”

Applicant’s Response:

Applicant again thanks the Examiner for his remarks but respectfully disagrees with his conclusion.

With respect to the rejection of Claim 1 based on Sharpe (‘753) Applicant notes that his claim now amended recites “means for supporting said conical tube at a fixed distance equal to about 1 to 2 times said inlet diameter away from said fuel injector nozzle” (emphasis added) while Sharpe recites at col. 3, lines 12 – 13 that “...fuel injector 4 is located within the main duct at the upstream end of the inlet to the mixing duct 3” (again, emphasis added).

Therefore, Applicant respectfully traverses the Examiner’s rejection of Claim 1 with respect to Sharpe under 35 U.S.C. §102(b) because Sharpe does not teach or suggest all of the limitations of the claimed invention, as amended, pursuant to MPEP §2131. Consequently, Applicant respectfully asserts that he has overcome the rejection under 35 U.S.C. §102(b) in Claim 1 based on Sharpe. Furthermore, because Claims 5, 8, and 10 all ultimately depend from Claim 1 (Claim 2 – 4 and 9 are canceled) and because, by definition, these further narrow the scope of a claim now shown to be distinguished over Sharpe they also must also distinguish over Sharpe (‘753). Therefore, Applicants respectfully requests that the Examiner reconsider and withdraw his rejection of Claim 1 – 3, and 8 – 10 with respect to Sharpe (‘753).

With respect to Claim 1, based on Pontoppidan et al., (‘898) Applicant notes that the Examiner has asserted that Pontoppidan et al, discloses “... a conical tube 15 ... ” and “ ... means 14 for supporting the conical tube at a fixed distance longitudinally and axially away from the fuel injection nozzle,” and “ ... a fairing (adjacent to o-ring 18, see figure 1).” Applicant notes, further, that his claim, now amended, recites “means for supporting said conical tube at a fixed distance equal to about 1 to 2 times said inlet diameter away from said

fuel injector nozzle” (emphasis added) while Pontoppidan et al, is silent with respect to the distance between the fuel injector nozzle and the inlet of his conical tube except for the disclosure shown in FIG. 1, 2, 3, 5, and 7. Clearly the fuel nozzle is shown supported away from the body¹⁵ but in each case the distance illustrated is uniformly about 0.7 that of the inlet diameter of body 15 and not “1 to 2 times” the inlet diameter. Absent any express description to the contrary, the Applicant asserts that Pontoppidan et al fails to teach one of the claimed elements of his invention and therefore cannot anticipate his claim as required by MPEP §2131.

Furthermore, the Examiner has characterized the inside structure formed between surface 17 and the “o” ring groove disclosed in body 15 as a “fairing.” Applicant traverses this assertion, in particular because this structure is nowhere explicitly described by Pontoppidan et al, either and a “fairing” or as anything else. It is simply the chamfered edge of body 15 after the “o” ring groove is cut. However, even if this structure is assumed to be a “fairing”, Applicant asserts that it does not describe the fairing structure recited by his claim: i.e., “... a fairing structure comprising a smoothly curving edge, rolling outward from said inlet end and away from said interior surface wall at a constant radius.” Based on the features shown in FIGs. 1, 2, 3 ,5, and 7 the structure is neither “smoothly curving” nor does it have a “constant radius.” Consequently, Applicant respectfully asserts that that he has overcome the rejection under 35 U.S.C. §102(b) in Claim 1 based on Pontoppidan et al,. Furthermore, because Claims **8**, and **10** all ultimately depend from Claim 1 (Claims **2 – 4** and **9** are canceled) and because, by definition, these further narrow the scope of a claim now shown to be distinguished over Pontoppidan et al, they also must also distinguish over Pontoppidan et al,. Therefore, Applicants respectfully requests that the Examiner reconsider and withdraw his rejection of Claim **1, 8, and 10** with respect to Pontoppidan et al, ('898).

REJECTION UNDER 35 U.S.C. §103(a)***Examiner's Remarks:***

Examiner has rejected Claim 7 under 35 U.S.C. 103(a), as being unpatentable over Sharpe (U.S. Patent Serial No. 2,720,753) or Pontoppidan et al., (U.S. Patent Serial No. 5,694,898), in that:

“ Sharpe or Pontoppidan et at teaches all the limitation of the claim except for the conical angle outward form the central axis of about 7°-9°. At the time the invention was made it would have been an obvious matter of design choice to a person of ordinary skill in the art to configure the conical tube with conical angle outward form the central axis of about 7°-9° because Applicant has not disclosed that the conical angle outward form the central axis of about 7°-9° provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either conical outward angle because both provide the same purpose of mixing air and fuel. Therefore, it would have been an obvious matter of design choice to modify the device of Sharpe or Pontoppidan et al to obtain the invention as specified in claim 7.”

Applicant's Response:

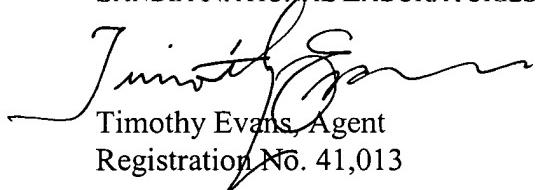
Applicant again thanks the Examiner for his remarks but again respectfully disagree with his conclusion. Applicant notes that Claim 7 depends from a claim now shown to be distinguished over Sharpe ('753) and Pontoppidan et al., ('898). Furthermore, Claim 1 is now shown to be unique, Claim 7 must also necessarily be found to be unique because it is ultimately dependent on Claim 1 and, by definition, merely narrows the scope of the broader claim. Consequently, Applicant asserts that he has overcome the rejection under 35 U.S.C. §103(a) with respect to Claim 7 in that he has remove the grounds for the rejection since the proposed combination does not recite all of the claim limitations as is required by MPEP §2143.03. The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw his rejection of Claim 7.

CONCLUSION

Applicant respectfully asserts that the instant invention claims a unique apparatus that is neither anticipated, nor suggested by the prior art. Applicant, therefore, respectfully requests reconsideration of the claims now presented and earnestly solicits the Examiner to pass these claims to allowance.

This response is:

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CERTIFICATION UNDER 37 CFR 1.8

I hereby certify that this Response and Amendment and any documents referred to as being attached thereto are being deposited with the U. S. Postal Service on **JANUARY 25, 2006**, as FIRST CLASS mail addressed to: Mail Stop Non Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Date of Deposit:

1/25/06

Anna Timmey
Person Making Deposit

Anna Timmey
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